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10/687,274	10/15/2003	Ying Chin Yeh	BOEI-1-1216	8967

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EXAMINER

TO, TUAN C

ART UNIT PAPER NUMBER

3663

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/687,274

Applicant(s)

YEH, YING CHIN

Examiner

Tuan C To

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,12-15,24,25,34,35,44 and 45 is/are rejected.
- 7) ☒ Claim(s) 3,5-11,16-23,26-33 and 36-43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 2, 4, 12-15, 24, 25, 34, 35, 44, and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by Yount et al. (U.S. 6443399B1).

Claim 1:

With respect to claim 1, the reference to Yount et al. has been cited as directing to either a fly-by-wire system or method performed on an aircraft in which the IMA (410) (integrated modular avionics) and FCM (402) (flight control module) are one the pairs of computer system being existed on an aircraft (Yount et al, figure 4, IMA 410, FCM 402). The system disclosed by Yount includes plurality of line replaceable units, which are the ACEs (actuator control electronics), coupled to a plurality of actuators (406). As graphically shown in figure 4 of Yount et al. the actuator control units (400) receive the digital control data from the pair of IMA/FCM (Yount et al., figure 4, IMA 410, FCM 402).

It is important to note that the IMA stands for “integrated modular avionics”, which includes flight control computer, and FCM is a computer which is added to the

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integrated modular avionics in order to add redundancy to the fly-by-wire system as introduced above. Although Yount et al. do not explain that the fly-by-wire system as mentioned above includes a plurality of redundant pairs of computer system, but what Yount et al. disclose does not limit to a single pair IMA/FCM on each air plane. In column 4, lines 54-57, Yount et al. stated that there are at least nine other flight control computers similar to the previous flight control computer illustrated in figure 3 (Yount et al, figure 3). Therefore, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems".

With regard to claim 2, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems". Therefore, Yount et al. inherently discloses the limitation: "the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems".

With regard to claim 4, the reference to Yount et al. shows that the ACE (400) stands for the line replaceable units that are configured to receive the control data of the IMA/FCM pair as said above (Yount et al, figure 4, ACE 400).

With regard to claims 12 and 13, the Yount et al. patent shows that the integrated modular avionics unit is connected with the flight control module unit, a plurality of actuators, and a plurality of actuator control units included within the aircraft (Yount et al, figure 4; column 5, lines 42-49).

Claim 14:

With respect to claim 14, the reference to Yount et al. has been cited as directing to either a fly-by-wire system or method performed on an aircraft in which the IMA (410)

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(integrated modular avionics" and FCM (402) (flight control module) are one the pairs of computer system being existed on an aircraft (Yount et al, figure 4, IMA 410, FCM 402). The system disclosed by Yount includes plurality of line replaceable units, which are the ACEs (actuator control electronics), coupled to a plurality of actuators (406). As graphically shown in figure 4 of Yount et al. the actuator control units (400) receive the digital control data from the pair of IMA/FCM (Yount et al., figure 4, IMA 410, FCM 402).

It is important to note that the IMA stands for "integrated modular avionics", which includes flight control computer, and FCM is a computer which is added to the integrated modular avionics in order to add redundancy to the fly-by-wire system as introduced above. Although Yount et al. do not explain that the fly-by-wire system as mention above includes a plurality of redundant pairs of computer system, but what Yount et al. disclose does not limit to a single pair IMA/FCM on each air plane. In column 4, lines 54-57, Yount et al. stated that there are at least nine other flight control computers similar to the previous flight control computer illustrated in figure 3 (Yount et al, figure 3). Therefore, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems".

With regard to claim 15, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems". Therefore, Yount et al. inherently discloses the limitation: "the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems".

Claim 24:

With respect to claim 24, the reference to Yount et al. has been cited as disclosing a fly-by-wire system method and a computer program product on an aircraft in which the IMA (410) (integrated modular avionics" and FCM (402) (flight control module) are one the pairs of computer system being existed on an aircraft (Yount et al, figure 4, IMA 410, FCM 402). The system disclosed by Yount includes a plurality of line replaceable units, which are the ACEs (actuator control electronics), coupled to a plurality of actuators (406). As graphically shown in figure 4 of Yount et al. the actuator control units (400) receive the digital control data from the pair of IMA/FCM (Yount et al., figure 4, IMA 410, FCM 402).

It is important to note that the IMA stands for "integrated modular avionics", which includes flight control computer, and FCM is a computer which is added to the integrated modular avionics in order to add redundancy to the fly-by-wire system as introduced above. Although Yount et al. do not explain that the fly-by-wire system as mention above includes a plurality of redundant pairs of computer system, but what Yount et al. disclose does not limit to a single pair IMA/FCM on each air plane. In column 4, lines 54-57, Yount et al. stated that there are at least nine other flight control computers similar to the previous flight control computer illustrated in figure 3 (Yount et al, figure 3). Therefore, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems".

With regard to claim 25, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems". Therefore, Yount et al. inherently discloses

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the limitation: "the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems".

Claim 34:

With respect to claim 34, the reference to Yount et al. has been cited as directing to either a fly-by-wire system on an aircraft in which the IMA (410) (integrated modular avionics" and FCM (402) (flight control module) are one the pairs of computer system being existed on an aircraft (Yount et al, figure 4, IMA 410, FCM 402). The system disclosed by Yount includes plurality of line replaceable units, which are the ACEs (actuator control electronics), coupled to a plurality of actuators (406). As graphically shown in figure 4 of Yount et al. the actuator control units (400) receive the digital control data from the pair of IMA/FCM (Yount et al., figure 4, IMA 410, FCM 402).

It is important to note that the IMA stands for "integrated modular avionics", which includes flight control computer, and FCM is a computer which is added to the integrated modular avionics in order to add redundancy to the fly-by-wire system as introduced above. Although Yount et al. do not explain that the fly-by-wire system as mention above includes a plurality of redundant pairs of computer system, but what Yount et al. disclose does not limit to a single pair IMA/FCM on each air plane. In column 4, lines 54-57, Yount et al. stated that there are at least nine other flight control computers similar to the previous flight control computer illustrated in figure 3 (Yount et al, figure 3). Therefore, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems".

With regard to claim 35, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems". Therefore, Yount et al. inherently discloses the limitation: "the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems".

Claim 44:

With respect to claim 44, the reference to Yount et al. has been cited as directing to an aircraft system and method in which the IMA (410) (integrated modular avionics" and FCM (402) (flight control module) are one the pairs of computer system being existed on an aircraft (Yount et al, figure 4, IMA 410, FCM 402). The system disclosed by Yount includes plurality of line replaceable units, which are the ACEs (actuator control electronics), coupled to a plurality of actuators (406). As graphically shown in figure 4 of Yount et al. the actuator control units (400) receive the digital control data from the pair of IMA/FCM (Yount et al., figure 4, IMA 410, FCM 402).

It is important to note that the IMA stands for "integrated modular avionics", which includes flight control computer, and FCM is a computer which is added to the integrated modular avionics in order to add redundancy to the fly-by-wire system as introduced above. Although Yount et al. do not explain that the fly-by-wire system as mention above includes a plurality of redundant pairs of computer system, but what Yount et al. disclose does not limit to a single pair IMA/FCM on each air plane. In column 4, lines 54-57, Yount et al. stated that there are at least nine other flight control computers similar to the previous flight control computer illustrated in figure 3 (Yount et



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al, figure 3). Therefore, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems".

Claim 45:

With respect to claim 45, the reference to Yount et al. has been cited as directing to either a fly-by-wire system or method performed on an aircraft in which the IMA (410) (integrated modular avionics" and FCM (402) (flight control module) are one the pairs of computer system being existed on an aircraft (Yount et al, figure 4, IMA 410, FCM 402). The system disclosed by Yount includes plurality of line replaceable units, which are the ACEs (actuator control electronics), coupled to a plurality of actuators (406). As graphically shown in figure 4 of Yount et al. the actuator control units (400) receive the digital control data from the pair of IMA/FCM (Yount et al., figure 4, IMA 410, FCM 402).

It is important to note that the IMA stands for "integrated modular avionics", which includes flight control computer, and FCM is a computer which is added to the integrated modular avionics in order to add redundancy to the fly-by-wire system as introduced above. Although Yount et al. do not explain that the fly-by-wire system as mention above includes a plurality of redundant pairs of computer system, but what Yount et al. disclose does not limit to a single pair IMA/FCM on each air plane. In column 4, lines 54-57, Yount et al. stated that there are at least nine other flight control computers similar to the previous flight control computer illustrated in figure 3 (Yount et al, figure 3). Therefore, Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems".

***Allowable Subject Matter***

After carefully searching some areas that are relevant to the subject matter of the claimed invention, the examiner has found that none of the references discloses the following: "the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems", and "each of the plurality of line replaceable units converts the selected digital control data into an analog signal and sends the analog signal to the corresponding actuator".

Thus, claims 3, 5-11, 16-23, 26-33, and 36-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The status of objection of claims 2, 15, 25, and 35 has been reversed because the reference to Yount et al. read on the limitation: "the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems".

***Response to Arguments***

Applicant's arguments filed 12/13/2004 have been fully considered but they are not persuasive.

As discussed in the main body of this office action, IMA stands for "integrated modular avionics", which includes flight control computer, and FCM, which is the flight control module, is added to the IMA (integrated modular avionics) in order to add redundancy to the fly-by-wire system as disclosed in Yount et al. It is clearly disclosed in the patent, IMA/FCM would be a pair of redundant computer systems.

Although Yount et al. do not explain that the fly-by-wire system as mentioned above includes a plurality of redundant pairs of computer system, but what Yount et al. disclosed does not limit to a single pair IMA/FCM on each air plane. In column 4, lines 54-57, Yount et al. further discussed about the previous flight control computer as the following: there are at least nine other flight control computers similar to the previous flight control computer illustrated in figure 3 (Yount et al, figure 3), each receiving instructions from the same pilot's input. Thus, Yount et al. does not limit a fly-by-wire system with a single pair of redundant computers as mentioned above. The pair of redundant computer systems represented in Yount et al. is an example of one of a plurality of redundant pairs of computer systems existed on an aircraft.

Yount et al. inherently disclose the limitation: "a plurality of redundant pairs of computer systems".

### ***Conclusions***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan C To whose telephone number is (703) 308-6273. The examiner can normally be reached on from 8:00AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703) 305-8233.

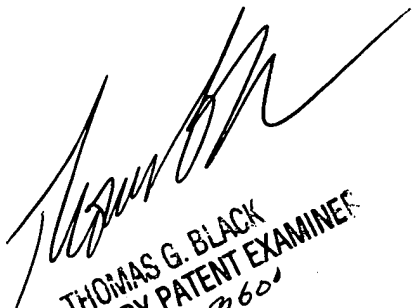
The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/tc

March 6, 2005



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